

February 03, 1998

VPCD 98-02

(LDV/LDT/SMV)

Dear Manufacturer:

SUBJECT: Certification to Clean-Fuel Vehicle Standards

EPA has responsibility for certifying vehicles to the Clean-Fuel Fleet (CFV) standards contained in 40 CFR Part 88 for sale to fleets and other purchasers. This guidance is regarding issues related to the certification, specifically of gasoline-powered vehicles, to the CFV standards. This guidance document does not create or change the legal rights or obligations of any parties nor establish any binding rules or requirements. Since Agency decisions on any particular matters are founded on the unique facts presented, should any entity wish to propose alternative approaches to these issues, the Agency will evaluate them in context at the time presented.

To date manufacturers have chosen to certify most of their LEV technology engine families as California only engine families using California Phase 2 gasoline as the certification fuel. The Agency believes that the guidance that follows will encourage manufacturers to certify these same technologies federally (on federal certification gasoline test fuel) thereby increasing the availability of product offerings certified to CFV standards. For the reasons articulated below, this policy will also limit the in-use recall liability of vehicles certified to CFV standards and operated on commercially available fuel to their emissions performance on federal test fuel.

The Clean Fuel Fleet provisions included in Part C of Title II of the Clean Air Act (CAA), require states to adopt Clean Fuel Fleet Programs (CFFPs) for certain ozone and carbon monoxide nonattainment areas. States' CFFPs must comply with the requirements of Section 246 of the CAA, and must require covered fleet owners to include a certain percentage of clean-fuel vehicles in their new fleet vehicle purchases each year after the program begins. A clean-fuel vehicle is defined as "a vehicle in a class or category of vehicles which has been certified to meet for any model year the clean-fuel vehicle standards applicable under this part for that model year to clean-fuel vehicles in that class or category." 42 USC § 7581(7). The applicable standards, namely TLEV, LEV, ULEV, and ZEV, are specified in 40 CFR §88.104-94 and mirror standards included in California's LEV program.

Section 246 calls for fleet operators to operate their clean-fuel vehicles on “clean alternative fuels” in the covered nonattainment areas. A clean alternative fuel is defined as “any fuel ... used in a clean-fuel vehicle that complies with the standards and requirements applicable to such vehicle under this title when using such fuel¹.” These requirements mean that fleet owners will only get credit under a CFFP if they purchase and use a vehicle which will operate on a clean alternative fuel for that vehicle. Based on limited vehicle choice for fleet owners, due in part to the limited availability of fuels that qualify as clean alternative fuels, EPA has announced² a one year delay of the start date for the CFFP to the 1999 model year.

The CAA prohibits EPA from mandating that manufacturers certify and produce clean-fuel vehicles for the CFFP. Vehicle manufacturers and fleet operators have requested guidance on whether commercially available gasoline, including conventional and reformulated gasoline, would be considered a “clean alternative fuel” for a CFV certified using the federal certification procedures, including the federal test fuel specifications. A review of EPA’s current certification and compliance procedures is helpful in responding to this issue.

EPA’s certification procedures require demonstration of the mechanical and exhaust emission deterioration characteristic of each engine family. Manufacturers, when certifying vehicles to meet federal emission standards, use commercially-available federal fuels when accumulating mileage and federal test fuel when performing emissions testing. The deterioration demonstration is shown by testing³ at least one vehicle per engine family at multiple intervals for the useful life of the vehicle (100,000 miles for light-duty vehicles). Manufacturers then mathematically combine the results of these tests to determine the exhaust emission deterioration factor for each pollutant. If a manufacturer were to use commercially available federal fuel during the 100,000 mile accumulation, the absolute emission levels at each test point would likely be higher than if commercially available California fuel were used. However, the slope of the deterioration would be very similar because a standardized test fuel is used, not a commercial fuel. EPA recognizes that some manufacturers wishing to certify 1999 vehicles according to the provisions in this guidance document have already begun or completed their emissions deterioration testing using commercially available California fuels. Therefore, EPA will allow the deterioration factors generated by each vehicle subject to the

¹ 42 USC § 7581 (1)

² Clean Fuel Implementation MEMORANDUM, from Margo Oge to Region Directors, May 22, 1997

³ Each exhaust emission test is conducted using a standardized fuel meeting the requirements of 40 CFR 86.113-94.

provisions in this document to be used without having to demonstrate a new exhaust deterioration on a second fuel based on previous EPA policy regarding durability carryover of California data.

The provisions of 40 CFR 86.096-24(f), Advisory Circular 17F, and the January 10, 1994, “Dear Manufacturer Letter” 94-01 provide the basis for EPA to accept the carryover and/or carryacross of data from California only engine families.

In the “Dear Manufacturer Letter,” 94-01, EPA identifies three specific considerations for the carryover and carryacross of California durability data. These considerations are:

1. Effects on exhaust emission levels of the California fuel and test procedures.
2. Effects on the deterioration of mileage and accumulation using Phase 2 fuel, and
3. The possibility of linecrossing using EPA test fuel and test procedures.

For the purpose of CFV’s, each request to carryover California LEV durability data must address items 2) and 3) when the durability service accumulation mileage was completed using Phase 2 fuel. EPA believes durability carryover can be approved without significant risk to emissions performance if a manufacturer can demonstrate that thermal degradation of the catalyst does not increase when using non-Phase 2 fuel. One method for showing this is provided in the appendix of A/C 17F.

The manufacturer must also provide a technical rationale for concluding that the linecrossing criteria of §86.094-(28) (a) (4) (B) would have been satisfied if the vehicle had operated on non-Phase 2 fuel during mileage accumulation and the actual emission testing been conducted using a fuel meeting the criteria of §86.113-94(a).

For vehicles that completed all service accumulation mileage on non-phase 2 fuel the criteria of item 2) will have already been satisfied. For item 3), however, the actual emission testing would have been conducted using Phase 2 fuel. Therefore, the manufacturer must provide the technical rationale for concluding that the linecrossing criteria would have been satisfied if the emission testing had been conducted using the fuel meeting the criteria of §86.113-94(a).

Confirmatory compliance testing conducted by both EPA and CARB uses gasoline meeting the various fuel parameters for different components, like RVP and lead, that are specified in the certification test fuel regulations. A comparison of the regulatory specifications for test fuel for the two programs shows that California fuel has generally more stringent specifications than federal test fuel. Federal RVP and sulfur specifications are not as restrictive or stringent as CARB’s specifications, with federal test fuel allowing up to 1000

ppm sulfur and 8.7-9.2 psi RVP, while CARB limits these two specifications to 30-40 ppm sulfur and 6.7-7.0 psi RVP.

Both the compliance testing conducted by EPA and emissions testing conducted during the certification process by the manufacturers use a test fuel meeting EPA's test fuel specifications. Although the specifications cover a wide variety of fuels, EPA's test fuels have generally had a consistent composition over time, mainly for purposes of testing consistency and correlation with other test facilities. Manufacturers use similar fuels in their certification testing as well. Federal test fuel has historically been a low sulfur fuel.

Both EPA and CARB practices allow in-use compliance testing using the same kind of fuel used to perform certification testing, even though both agencies have the discretion in their regulations to perform compliance and certification testing on any fuels that meet the specifications for test fuels. EPA has historically considered that a light-duty vehicle is in compliance with the in-use emissions standards that it is certified to if it is tested after in-use operation on commercially available fuels and it meets the emissions standard test when tested using Federal test fuel. This is similar to what happens in the certification process. California uses a similar approach to compliance testing. Although at this time CARB's test fuel specifications more closely match in-use fuel specifications, given its restrictions on in-use fuels.

Manufacturers have expressed concern about certifying CFVs using federal test fuels if the tests are performed using sulfur levels higher than normally found. This is because of the current uncertainty about the emissions impact of higher sulfur levels on emissions results. There are several test programs currently underway to generate data to resolve this technical issue.

As noted above, there is no sales or production mandate on manufacturers, and vehicle manufacturers are concerned about the potential liability in certifying a CFV using federal test fuels other than indolene. Fleet operators are interested in a wide selection of CFVs, including those that can lawfully be operated on commercially available gasoline, such as conventional and reformulated gasoline. At this initial stage in implementation of the CFV fleet programs, EPA believes it is important to provide an incentive for vehicle manufacturers to produce and certify CFVs that can be operated by fleets on commercially available gasoline. In order to provide such an incentive, EPA is interpreting "clean alternative fuel" to include commercially available gasoline, where the CFV is certified using gasolines that meet the various federal certification requirements. This includes an emissions deterioration procedure involving vehicle operation using commercially available fuel (or an alternative durability program that provides comparable emissions deterioration estimates), and emissions testing using test fuel that meets the test fuel specifications. As in the past, EPA

will continue to use fuels with sulfur levels no greater than 40 ppm for certification and in-use compliance testing of these CFVs.

Under this interpretation, a CFV will be considered to comply in-use with the applicable CFV standards, after operation on some commercially available gasoline, if it meets the CFV standards when tested on Federal test fuel. Compliance with the CFV standards “when using commercially available gasoline” will mean compliance with the CFV standards using Federal test fuel after operation in-use on commercially available gasoline.⁴ This applies to CFVs the same approach that has been used in the past to determine in-use compliance with applicable emissions standards after operation on commercially available gasoline, and mirrors the role the test fuel and commercially available gasoline play in the certification process.

EPA recognizes the risk that CFV will likely emit at levels higher than the CFV standards when in actual in-use operation on commercially available gasoline. However the same kind of risk applies for all other in-use vehicles, including Tier 1 vehicles that operate on commercially available gasoline and are tested for in-use compliance using Federal test fuel. CFVs that operate on commercially available gasoline are still expected to emit at lower levels in-use than Tier 1 vehicles that operate on commercially available gasoline. EPA believes it is appropriate to take this risk in order to facilitate the initial implementation of the CFV program, and gain the emissions and technology benefits from this program.

The main purpose of this interpretation is to facilitate the initial implementation of the CFV program. EPA is in the process of evaluating the test data being generated by other test programs to identify the emissions impact of sulfur levels in gasoline. At some point in the future, EPA may decide that it is appropriate to take specific actions to reduce the impact of sulfur on vehicle emissions, such as changing the test fuel requirements or reducing the sulfur levels in commercial gasoline. Until EPA makes such a change for CFVs, however, EPA will continue to use low-sulfur federal test fuel as noted above for the CFV program.

⁴ Under the provisions in § 86.132 (d), EPA will consider a manufacturer request that additional preconditioning, beyond that currently done as part of the typical compliance testing program, be performed in order to address any unusual circumstances, which could include detrimental effects on CFVs from operation on commercially available fuel sold in the 49 states. This could include driving cycles which contain high temperature operation. As with any request of this type, EPA will address it on a case-by-case basis and the manufacturer will have to demonstrate the need for additional preconditioning. Such additional preconditioning shall only address any detrimental effects of the additional sulfur found in commercially available gasoline over that found in California Phase 2 fuel.

Sincerely,

Jane Armstrong, Director
Vehicles Programs and Compliance Division
Office of Mobile Sources